IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:	REZNEK et al.	Examiner:	Lyle A. Alexander
Application Number:	10/650,124	Group Art Unit:	1797
Filed:	August 27, 2003	Confirmation No.:	5523
Docket No.:	CBK03073 (3600-374-44)		

For: METHODS OF SPECIFYING OR IDENTIFYING PARTICULATE MATERIAL

APPEAL BRIEF
UNDER 37 C.F.R. § 41

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Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

January 29, 2010

Sir:

(1) Identification

The appellants, application, and the Examiner's identification data associated with this paper are provided in the above-captioned heading.

The appellants hereby file an Appeal Brief under 37 C.F.R. § 41.37, together with the applicable fee under 37 C.F.R. § 41.20(b)(2).

A Notice of Appeal under 37 CFR §41.31 was previously filed with the applicable fee under § 41.20(b)(1) on October 30, 2009.

(2) Table of Contents

(3) Real Party in Interest

The real party in interest in this case is *Cabot Corporation*, the assignee of record.

(4) Related Appeals and Interferences

The appellants are aware of appeals in U.S. Application Nos. 10/673,093 and 10/649,347, which the Honorable Board may consider to directly affect, be directly affected by, or have a bearing on the Board's decision in the present appeal.

(5) Status of Claims

Claims 2-6, 13, 15, and 26-68 are canceled.

Claims 1, 7-12, 14, 16-25, 69, and 70 are rejected.

No claims are withdrawn.

Claims 1, 7-12, 14, 16-25, 69, and 70 are on appeal.

(6) Status of Amendments

No amendment was filed subsequent to the Final Office Action dated October 9, 2009.

(7) Summary of Claimed Subject Matter

Concise Explanation of the Subject Matter Defined in Independent Claims and Separately Argued Dependent Claims

a) Independent Claim 1

Independent claim 1 is directed to a method for identifying a product specification for a batch, lot, or shipment of particulate material (¶ [0009], page 4, lines 8-14; ¶ [0017], page 5, line 27 to page 6, line 9; ¶ [0013], page 5, lines 5-8; and claim 1, page 26, lines 3-5) comprising:

providing the particulate material (¶ [0019], page 6, line 23 to page 7, line 4; and ¶ [0038], page 13, line 11 to page 14, line 5);

measuring and obtaining at least one interfacial potential property value for the batch, lot, or shipment of particulate material (¶ [0020], page 7, lines 5-11; ¶ [0039], page 14, lines 6-13; and original claims 4-5, page 26, lines 13-17), and including the interfacial potential property value on a product specification sheet, purchase order, invoice, contract, waiver to a contract, or combinations thereof for the batch, lot, or shipment of particulate material (¶ [0019], page 6, lines 23-29; ¶ [0055], page 19, lines 17-18; and original claim 3, page 26, lines 10-12).

The particulate material in this method is carbon black or silica. (¶ [0038], page 13, lines 13-16; original claims 14 and 16, page 27, lines 12 and 14).

b) Dependent Claim 7

Dependent claim 7, which depends from claim 1, further comprises the step of specifying at least one morphological value to the batch, lot, or shipment of particulate material. (¶ [0019], page 7, lines 1-4).

c) Dependent Claim 8

Dependent claim 8, which depends from claim 7, which further depends from claim 1,

further recites that specifying comprises including the morphological value on a product specification sheet for the batch, lot, or shipment of particulate material. (¶ [0019], page 7, lines 1-4).

d) Dependent Claim 9

Dependent claim 9, which depends from claim 8, which further depends from claim 1, specifies that the morphological value is selected from surface area, particle size, structure, porosity, or combinations thereof. (¶ [0024], page 8, lines 9-14).

e) Dependent Claim 10

Dependent claim 10, which depends from claim 1, further comprises the step of specifying at least one chemical value to the batch, lot, or shipment of particulate material. (¶ [0019], page 7, lines 1-4).

f) Dependent Claim 11

Dependent claim 11, which depends from claim 10, which further depends from claim 1, further recites that specifying comprises including the chemical value on a product specification sheet for the batch, lot, or shipment of particulate material. (¶ [0020], page 7, lines 5-11; ¶ [0035], page 12, lines 18-20).

g) Dependent Claim 12

Dependent claim 12, which depends from claim 11, which further depends from claim 1, specifies that the chemical value is selected from pH, functional group level, or zeta potential. (¶ [0036], page 13, lines 1-2).

h) Dependent Claim 14

Dependent claim 14, which depends from claim 1, specifies that the particulate material is selected to be carbon black. (¶ [0038], page 13, lines 11-23).

i) Dependent Claim 16

Dependent claim 16, which depends from claim 1, specifies that the particulate material is selected to be fumed silica. (¶ [0038], page 13, lines 11-23).

j) Dependent Claim 17

Dependent claim 17, which depends from claim 1, further comprises determining the interfacial potential property value by an absorptometry method comprising determining volume of a liquid added to the particulate material at maximum torque. (¶ [0044] - [0045], page 15, line 25 to page 16, line 13).

k) Dependent Claim 18

Dependent claim 18, which depends from claim 17, which further depends from claim 1, specifies that the absorptometry method uses a liquid other than DBP or paraffin oil. (¶ [0045], page 16, lines 5-13 and original claim 18, page 27, lines 17-18).

l) Dependent Claim 19

Dependent claim 19, which depends from claim 18, which further depends from claim 17, which further depends from claim 1, specifies that the absorptometry method uses water, ethylene glycol, or mixtures thereof. (Example 1, page 20; ¶ [0059], page 20, lines 10-15 and original claim 19, page 28, lines 1-2).

m) Dependent Claim 20

Dependent claim 20, which depends from claim 1, specifies that the interfacial potential property value is determined by a wicking rate method comprising measuring the rate of wicking of a liquid up a bed packed with the particulate material. (¶ [0046], page 16, lines 14-21).

n) Dependent Claim 21

Dependent claim 21, which depends from claim 1, specifies that the interfacial potential

property value is determined by a yield point method comprising measuring degree of flocculation as Bingham yield point. (¶ [0047], page 16, lines 22-30 and original claim 21, page 28, lines 5-6).

o) Dependent Claim 22

Dependent claim 22, which depends from claim 1, specifies that the interfacial potential property value is determined by an interfacial potential vapor adsorption method comprising measuring a spreading pressure of a gas on the particulate material. (¶ [0051], page 17, lines 19-29).

p) Dependent Claim 23

Dependent claim 23, which depends from claim 1, specifies that the interfacial potential property value is determined by an inverse gas chromatography method comprising measuring retention of time of a gas probe flowing through a bed packed with the particulate material. (¶ [0050], page 17, lines 11-18).

q) Dependent Claim 24

Dependent claim 24, which depends from claim 7, which further depends from claim 1, specifies that the morphological value is determined by measuring liquid adsorption, measuring vapor adsorption, microscopic analysis, or combinations thereof. (¶ [0033], page 11, lines 5-8).

r) Dependent Claim 25

Dependent claim 25, which depends from claim 7, which further depends from claim 1, specifies that the morphological value is determined by an adsorption method comprising measuring the adsorption of iodine, nitrogen, CTAB, DBP, or paraffin oil by the particulate material. (¶ [0033], page 11, lines 8-27; Table 1, page 12).

s) Independent Claim 69

Independent claim 69 is directed to a method for identifying a product specification for a batch, lot, or shipment of particulate material (¶ [0009], page 4, lines 8-14; ¶ [0017], page 5, line 27 to page 6, line 9; ¶ [0013], page 5, lines 5-8; and claim 1, page 26, lines 3-5) comprising

providing the particulate material (¶ [0019], page 6, line 23 to page 7, line 4; and ¶ [0038], page 13, line 11 to page 14, line 5);

measuring and obtaining at least one interfacial potential property value for the batch, lot, or shipment of particulate material (¶ [0020], page 7, lines 5-11; ¶ [0039], page 14, lines 6-13; and original claims 4-5, page 26, lines 13-17), and including the interfacial potential property value on a product specification sheet, purchase order, invoice, contract, waiver to a contract, or combinations thereof for the batch, lot, or shipment of particulate material (¶ [0019], page 6, lines 23-29; ¶ [0055], page 19, lines 17-18; and original claim 3, page 26, lines 10-12), wherein the interfacial potential property value of the particulate material is a measurement of at least one physical property that depends on the interaction of the particulate material with at least one other material or with itself, after the effects of morphology have been removed in the measuring and obtaining of the interfacial potential property value for any physical phenomenon that responds to both morphology and interfacial potential (¶ [0022], page 7, line 25 to page 8, line 2; ¶ [0060], page 21, line 11 to ¶ [0071], page 25, line 7).

The particulate material of this method is carbon black or silica (¶ [0038], page 13, lines 13-16; original claims 14 and 16, page 27, lines 12 and 14).

t) Dependent Claim 70

Dependent claim 70, which depends from claim 69, further recites that the interfacial potential property value is determined by:

conducting an absorptometry method that comprises determining volume of a liquid added to the particulate material at maximum torque (¶ [0044], page 15, line 25 to page 16, line 4; ¶ [0045], page 16, lines 5-13; ¶ [0061], page 21, lines 14-21; ¶ [0062], page 21, lines 22-32; ¶ [0064], page 22, lines 8-22; ¶ [0069], page 24, lines 1-11; ¶ [0070], page 24, lines 12-26); or

a wicking rate method comprising measuring the rate of wicking of a liquid up a bed packed with the particulate material (¶ [0046], page 16, lines 14-21; ¶ [0066], page 23, lines 2-25; original claim 18, page 28, lines 3-4); or

a yield point method comprising measuring degree of flocculation as Bingham yield point (¶ [0047], page 16, lines 22-30; original claim 21, page 28, lines 5-6); or

a interfacial potential vapor adsorption method comprising measuring a spreading pressure of a gas on the particulate material (¶ [0051], page 17, lines 19-29; original claim 22, page 28, lines 7-8); or

an inverse gas chromatography method comprising measuring retention of time of a gas probe flowing through a bed packed with the particulate material (¶ [0050], page 17, lines 11-18; original claim 23, page 28, lines 9-10).

(8) Grounds of Rejection to be Reviewed on Appeal

1) Whether claims 69 and 70 are unpatentable under 35 U.S.C. §112, first paragraph, as failing to comply with the written description requirement.

2) Whether claims 69 and 70 are unpatentable under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

3) Whether claims 1, 7-12, 14, 16-25, 69, and 70 are unpatentable under 35 U.S.C. §102(e), as being anticipated by U.S. Patent Application Publication No. 2003/0097871 A1 to Mansky.

(9) Argument

1. Rejection of Claims 69 and 70 under 35 U.S.C. §112, first paragraph, for failing to comply with the written description requirement.

Claims 69 and 70 were rejected under 35 U.S.C. §112, first paragraph, as failing to comply with the written description requirement.

Claim 69

The Examiner's Position

In the Final Office Action dated October 9, 2009 (page 2), the Examiner stated claims 69 and 70 failed to comply with the written description requirement for the following reasons:

> It is not clear the original specification teaches the claimed "... property value for any physical phenomenon ...". The original specification has been consulted and the only reference to ""...physical phenomenon ..." [sic] was in paragraphs [0022], [0030] and [0031]. However, there was no teaching of "...property value for **any physical phenomenon** ...". Clarification could be achieved by identifying the appropriate portion of the specification that supports these limitations.

The Appellants' Position

Appellants respectfully submit that claim 69 on appeal complies with the written description requirement. The Examiner's above-indicated partial quote of language from claim 69 is extracted from language amended in this claim in the appellants' amendment filed July 2, 2009. In fuller text, this amended claim language reads as follows: "... after the effects of morphology have been removed *in said measuring and obtaining of said interfacial potential property value for any physical phenomenon that responds to both morphology and interfacial potential*" [added clarifying language indicated by italics].

As disclosed in paragraph [0022], at page 7, lines 25-27, of the original application:

> The interfacial potential of a particulate material is defined through a measure of a physical phenomenon that depends on the interaction of particulate material with other materials or with itself, after the effects of morphology have been removed.

As further disclosed in paragraph [0039] at page 14, lines 6-7 of the original application:

> As described above, the interfacial potential property value may be **any property** that can be correlated to the interfacial potential of the particulate material [appellants' emphasis added by bold font].

As further disclosed in paragraph [0026], at page 9, lines 4-8, of the original application;

> While these phenomena result from both morphological as well as interfacial potential effects, the way in which the measurements are analyzed, i.e., the calculation or algorithm used, will determine whether it is a morphological value or an interfacial potential property value. Thus, it is possible to use a test that responds to both morphology and interfacial potential and obtain independent information about both.

In view of at least the above-indicated supporting disclosures of the present application, there is a clear teaching of the recitation of "...property value for any physical phenomenon ..." in claim 69 on appeal. Further, clarification has been provided and achieved as requested by the Examiner, as the appropriate portions of the specification that support this recitation in claim 69 have been identified.

For at least these reasons, claim 69 on appeal complies with the written description requirement of 35 U.S.C. §112, first paragraph. Claim 70, which depends from claim 69, complies with the written description requirement for at the least the same reasons as its parent claim. Accordingly, Appellants respectfully request reversal of this rejection.

2. Rejection of Claims 69 and 70 under 35 U.S.C. §112, second paragraph, for indefiniteness.

Claims 69 and 70 were rejected under 35 U.S.C. §112, second paragraph as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention.

Claim 69

The Examiner's Position

In the Final Office Action dated October 9, 2009 (page 2), the Examiner stated claims 69 and 70 were indefinite for the following reasons:

> The claim is not clear what steps are intended by "after the effects of the morphology have been removed". Additionally, it is not clear what is intended by "...property value for any physical phenomenon ...".

The Appellants' Position

Appellants respectfully submit that claims 69 and 70 on appeal define the subject matter which they regard as their invention with a reasonable degree of particularity and distinctness whereby the metes and bounds of the subject matter that would be protected by the patent grant can be ascertained (M.P.E.P. § 2173.02). Further, the test for definiteness under 35 U.S.C. §112, second paragraph, requires that the specification be considered to determine whether "those skilled in the art would understand what is claimed when the claim is read in light of the specification." *Orthokinetics, Inc. v. Safety Travel Chairs, Inc.*, 806 F.2d 1565, 1576, 1 USPQ2d 1081, 1088 (Fed. Cir. 1986). If the scope of the subject matter embraced by the claims is clear, and if Applicants have not otherwise indicated that they intend the invention to be of a scope different from that defined in the claims, then the claims comply with 35 U.S.C. §112, second paragraph (M.P.E.P. § 2173.04).

The scope of the subject matter of claim 69 is clear in view of the corresponding teachings in the present specification (e.g., see paragraphs [0017], [0026], [0039], and [0053]-[0055]). Further, Appellants have not indicated an intended scope that is different from the wording of claim 69 on appeal. The specification teaches to one of ordinary skill what is meant by "after the effects of the morphology have been removed." Responsive to the Examiner's above-noted question, the present application supports the recitation "after the effects of the morphology have been removed" in at least paragraphs [0022]-[0032], at page 7, line 25 to page 32, line 29, and Examples 2-5, at pages 21-25. As explained in the present application, there are certain circumstances where a physical phenomenon which responds to both morphology and interfacial potential may be used to assign an interfacial potential property value to a particulate material. As described in paragraph [0030], at page 10, lines 1-22, of the present application, a physical phenomenon having this characteristic may be used where one of the described conditions A), B) or C) is met. If one of the conditions A), B) or C) is not met, then a physical phenomenon which responds to both morphology and interfacial potential is removed from consideration in assigning the interfacial potential property value to the particulate material as part of the "measuring and obtaining ... and including" recitations of present claim 69. This is illustrated in Examples 2-5, at pages 21-25, and FIG. 1, of the present application, which show in an exemplary manner how to identify such effects of morphology for removal from consideration in assigning the interfacial potential property value of the particulate material. Thus, the "after the effects of morphology have been removed" language of claim 69 is understood from the supporting disclosures of the

application to relate to a process of selecting (assigning) the interfacial potential property value to be used in the claimed method.

Claim 69 on appeal also further recites what is meant by the "after the effects of morphology have been removed" recitation by further stating that the effects of morphology have been removed "in said measuring and obtaining of said interfacial potential property value for any physical phenomenon that responds to both morphology and interfacial potential ...".

In view of at least the above, the language in claim 69 of the "effects of the morphology are removed" is supported by these teachings of the original application. Therefore, the claimed subject matter in question was and is described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention.

As also indicated, paragraph [0039] at page 14, lines 6-7 of the original application explains that "the interfacial potential property value may be any property that can be correlated to the interfacial potential of the particulate material," wherein such a property or phenomenon that responds to both morphology and interfacial potential that may be used to assign an interfacial potential property value to a particulate material can be identified in manners clearly illustrated in the present application, such as in paragraph [0030] (page 10, lines 1-22) and in Examples 2-5 (pages 21-25). Therefore, it is clear and definite what is intended by "property value for any physical phenomenon..." recited in claim 69 on appeal, when read in light of the specification as required.

For at least these reasons, claim 69 on appeal sets forth what Appellants regard as their invention with a reasonable degree of precision and particularity, and satisfies the requirements

of 35 U.S.C. §112, second paragraph. Claim 70, which depends from claim 69, is clear and definite for at the least the same reasons as its parent claim. Accordingly, Appellants respectfully request reversal of this rejection.

3. Rejection of Claims 1, 7-12, 14, 16-25, and 69-70 under 35 U.S.C. §102(e) over Mansky (U.S. Patent Application Publication No. 2003/0097871 A1).

Claims 1, 7-12, 14, 16-25, 69, and 70 were finally rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Patent Application Publication No. 2003/0097871 A1 to Mansky (hereinafter "Manksy").

Claim 1

The Examiner's Position

In the Final Office Action dated October 9, 2009 (page 3), the Examiner stated Mansky teaches, in paragraph [0006], a method for screening an array of sample materials for a desired specific property, and each sample is subjected to one or more forces and the response to the forces is monitored and correlated to each sample materials. The Examiner further stated that paragraphs [0015]-[0021] teach identifying each sample by a tag and subjecting the samples to forces such as viscosity, surface tension and interfacial tensions. The Examiner stated that the Office has read these teachings on the claimed "identifying a product specification ... providing said particulate material ...measuring and obtaining at least one interfacial property ...". The Examiner stated paragraphs [0055] and [0058] teach that the material can be silica or carbon black respectively and that the Office has read the taught "**desired specific property**" on the claimed " ... *value on a product specification sheet, ... etc.*" The Examiner also stated with regard to claim 69 on appeal that the Office maintains Mansky teaches in paragraphs [0015]-[0021] identifying the physical properties relating to viscosity, surface tension and interfacial

tensions which are indistinguishable from the instant claims. At pages 4-5 of the Final Office Action, the Examiner further stated that the Office understands samples "A"-"E" of Example 2 all are within 96% of the max DBP" value but vary more widely with the other tests. The Examiner also stated that "Applicants state the specification teaches that some different analysis techniques give different results on the same set of sample whereas other techniques could give the same result on the same set of samples." The Examiner stated that it is not clear how one of ordinary skill in the art would select these different test[s] to be compared, and the pending claims only require a single analysis and these remarks of the applicants are not commensurate in scope with the pending claims. The Examiner further indicated that the Office maintains Manksy clearly teaches methods of screening and detecting surface or interfacial tension.

The Appellants' Position

The present invention does not relate to any method of binary code tagging with a particle that may or may not be shown in Mansky. Mansky is not at all relevant to the subject matter of the claimed invention.

As recited in claim 1 on appeal, the present invention is directed to a method for identifying a product specification for a batch, lot, or shipment of particulate material which involves measuring *an interfacial potential property value* for the batch, lot, or shipment of particulate material. Present claim 69 on appeal has similar recitations as claim 1 and further recites the interfacial potential property value is a measurement of at least one physical property of the material that depends on the interaction of the particulate with at least one other material or itself *after the effects of morphology have been removed* in the measuring and obtaining of the interfacial potential property value for any physical phenomenon that responds to both morphology and interfacial potential. As explained in the present application, and illustrated in more detail below,

an interfacial potential property value is not a conventional morphological and/or chemical value used in specifying particulate material. The interfacial potential property value can be included on a product specification sheet for the brand or grade of particulate material. The present invention is useful in resolving a serious problem associated with particulate material production in which particulate materials that are seemingly made "within spec" with respect to one or more measures of morphology, such as particles size, surface area, structure, porosity, etc., nonetheless do not perform consistently as expected in customer applications. The method of the present invention involves the step of measuring at least one interfacial potential property value to the lot, batch, sample, and/or shipment of particulate material to help insure that customers receive particulate materials that not only are "within spec" relative to morphological properties and the like, but which also will perform consistently and reliably in applications. Oftentimes, a customer and/or a supplier will agree on specifications for a unit of product that may be included in a contractual agreement, purchase order, invoice, contract, waiver to a contract, or combinations thereof. In various embodiments of the present invention, the product specification that includes at least one interfacial potential property value also can be included as part of such materials. Mansky does not teach any method for creating a product specification having all of the features as recited in claim 1 or claim 69 on appeal.

The concept of "interfacial potential" as used in the present invention is further illustrated in the examples and figures of the present application. Several of these illustrations are discussed below in summary fashion to assist the Honorable Board's understanding of the present claims on appeal, which include this terminology or related terms, such as "interfacial potential property value." In this illustrative discussion of "interfacial potential," several of the selected tables from the examples, some of which are annotated to assist the discussion, and the figure, are included

in the Evidence Appendix section of this Appeal Brief. For instance, Table 3 (Example 2: paragraph [0061]: page 21, lines 22-32) shows volume at maximum torque data taken on the same grade of carbon black from four manufacturing plants (↑31) as measured using four different liquids (↑32, ↑33, ↑34, ↑35). The terminology "same grade of carbon black" is understood to mean the carbon blacks share compliance with some specified measure of morphology, such as "% of max DBP" (↑32) at volume at maximum torque in this example. As the data in Table 3 shows, the results in volumes for "% of max DBP" (↑32) are closely clustered, but those obtained for the other liquids (↑33, ↑34, ↑35) are not the same from manufacturing plant to manufacturing plant. This means that the interfacial potentials are not the same for the four samples and hence the products are not the same, even though they were supposed to be uniform based on this one morphological criterion. Mansky shows no appreciation for this phenomenon and problem, which has been discovered and solved by the present inventors-appellants. Thus, the products would be better specified if at least one of these interfacial potential property values were included. Also illustrative, Table 4 (Example 3: paragraph [0064]: page 22, lines 8-22) shows data for a similar test as done for Example 2 (Table 3) except with a higher DBP specification carbon black (↑41), wherein the results show the volumes for "% of max DBP" (↑42) are closely clustered, but those obtained for the other liquids (↑43, ↑44, ↑45) are not the same from manufacturing plant to manufacturing plant. These data in Table 4 also show that the products would be better specified if at least one of these interfacial potential property values were included. The data shown in Table 5 (Example 4: paragraph [0066]: page 23, lines 2-25) includes upper rows (↓51), which shows that by the standard QA/QC values the listed carbon blacks are all the same by the standard specification. However, when the interfacial potentials are measured by the rate of wicking of various liquids up a packed powder

bed, as shown in lower rows (¶52), they differ by their interfacial potentials. A method of the present invention, which comprises assigning at least one interfacial potential property value, would be able to distinguish between them. The previous examples have used a single interfacial potential parameter from each test. However, combinations of multiple parameters can also be used in a method of the present claims on appeal. The data in Table 6 of the present application (Example 5: paragraph [0070]: page 24, lines 12-25) shows that carbon black samples CB-A to CB-E of the same grade that would be considered identical by a person in the industry based only on the morphological values, such as volume DBP or CDBP at maximum torque, iodine number, BET surface area, and STSA values, measured for the carbon black samples. Figure 1 (paragraph [0071]: page 24, line 26 to page 25, line 7) illustrates that samples of the same grade of carbon black that were indicated to be the same by standard morphology tests are seen to be different from each other when tested with the absorptometry method using different test liquids than DBP. As shown in Figure 1, measurement of volume at maximum torque using DBP (data points "■") would misleadingly indicate that the carbon black samples of the same grade are the same. However, the measurement of volume at maximum torque using water ("♦"), glycol ("▲"), 60/40 glycol/water ("●"), and paraffin oil ("◊"), shows data points that are significantly separated and not clustered together as with the DBP ("■") results. Therefore, these values can be used to specify differences in carbon black that is not shown by the conventional system. For example, the carbon black samples having the same morphological property can be measured for interfacial potential property value by an absorptometry measurement of volume of water (instead of DBP) at maximum torque to determine whether the results are separated (such as shown in Figure 1) for an indication that the samples are not actually the same when interfacial potential is accounted for, or not separated as an indication that the samples are the same when

interfacial potential is accounted for. As can be appreciated, the present invention essentially takes the specification of particulate material, such as carbon black, to a new higher level of specification and accuracy, which did not exist prior to the present invention. Further, procedures for measuring and obtaining at least one interfacial potential property value for a batch, lot, or shipment of carbon black or silica are clearly shown in illustrations provided in the present application.

"A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros., Inc. v. Union Oil Co.*, 814 F.2d 628, 631 (Fed. Cir. 1987). Mansky does not identically disclose, nor suggest or predict the outcome of, the claimed invention.

Mansky is entirely irrelevant to this process of identifying a product specification and merely relates to physically tagging materials for screening purposes. The product specification used in the present claims is not taught or even suggested in Mansky and, actually, Mansky uses conventional properties to simply screen the particulates.

In more detail, Mansky describes a method for screening an array of materials for mechanical or physical characteristics such as surface tension or interfacial tension (Abstract; paragraphs [0005], [0006], [0055], [0070]-[0093]). In contrast to the presently claimed invention, Mansky does not teach any method for identifying a product specification for a batch, lot, or shipment of particulate material comprising measuring and obtaining at least one interfacial potential property value for the batch, lot, or shipment of particulate material that is carbon black or silica. The measurements of surface tension or interfacial tension in Mansky are not measurements of interfacial potential property as defined in the present application and recited in the present claims. They are done in a manner that provides only morphological information, and preferably for *fluid* sample materials (see, e.g., paragraphs [0019]-[0020], [0070]-[0093]). There is no teaching,

suggestion or illustration in paragraphs [0015]-[0021] nor elsewhere in Mansky of using the surface or interfacial tension measurement methods shown therein for particulate material such as carbon black or silica. In this respect, the reference to "solid" in the last sentence of paragraph [0020] of Mansky merely refers to a medium or substrate that a liquid sample of interest can be tested with, and not the sample material of interest. This is further apparent from paragraph [0055] of Mansky which shows use of solid substrates for sample forming, positioning, and handling. Further, according to paragraph [0016] of Mansky, support beads or pellets are coated with the component(s) of interest, wherein the bead or pellet can be identified with a tag, such as an etched binary bar code used to indicate the history of the bead or pellet, i.e., to identify which components were deposited thereon. As indicated, the Final Office Action (page 3) also stated that Mansky teaches carbon black and silica in paragraphs [0055] and [0058] thereof. However, paragraph [0055] of Mansky does not relate to silica or carbon black as a particulate material. Instead, flat-surfaced or container-containing substrate materials for polymer samples appear to be shown in paragraph [0055] of Mansky. Paragraph [0058] of Mansky refers to non-polymer elements or compounds that can include carbon powders, such as carbon black. However, Mansky does not connect these non-polymer sample options with the coated bead or pellets of paragraph [0016]. No reasoning is provided in the Final Office Action that would connect any dry particulate or powder materials of paragraph [0058] of Mansky with the coated bead or pellet of paragraph [0016]. As explained by Mansky, the preferred embodiment of the reference is directed to screening *polymer* samples, which is a material that can be formed in situ on a substrate (e.g., see paragraphs [0038]-[0045]). There is no evidence for, or apparent reason to think, that the coated bead or pellet of Mansky would encompass the carbon black and silica samples. Further, Mansky does not connect the non-polymer sample options of paragraph [0058] with the surface/interfacial tension

measurements shown in paragraphs [0070]-[0093]. Mansky simply does not expressly or inherently relate to a method including a step of measuring and obtaining at least one interfacial property value for a batch, lot, or shipment of carbon black or silica. Therefore, Mansky's etched bead methodology does not address or solve the problem of particulate materials that appear to be "within spec" but do not perform consistently in end-use applications, as provided by the present invention. Mansky provides no recognition of that problem, nor inherently solves it in the same manner as the present claims by the screening methods that are taught therein. In view of the above facts, Mansky does not relate to any "single analysis" within the scope of the present claims on appeal.

In the Final Office Action (page 4), the Examiner states the Office understands samples "A"-"E" of Example 2 all are within 96% of the "max DBP" value but "vary more widely" with other tests. That is precisely the point. As shown by the test results in paragraph [0062](including Table 3) and as explained in paragraph [0063] of the present application, the measurement of maximum torque on the carbon black samples as a "max DBP" value gave a flawed "within spec" result. In particular, a "max DBP" value was measured for the four samples and it was noted that, in each case, the morphological value was essentially the same and, therefore, in the past, would have been considered "the same grade of carbon black" using conventional criteria for creating carbon black. However, and as noted by the Examiner, the other test results in Example 2 , *i.e.*, the volume at maximum torque measurements using the different fluids of EG, 60%EG, and Water, varied significantly and randomly from carbon black to carbon black from each plant. Thus, based on this additional criteria, the four samples were not the same, and technically are not the same grade of carbon black. In particular, these test results reveal and show that the determination of maximum torque via "max DBP" measured only a morphological

property, but not an interfacial potential property, as that term is defined in the present application and used in the present claims. On the other hand, the test results of Example 2 also show that measurement of maximum torque on the carbon black samples with EG, 60%EG, or Water, are measurements of an interfacial potential property of the carbon black samples. Interfacial potential property values using those properties thus can provide a more reliable QC and/or QA monitoring of the carbon black samples, unlike "max DBP". Therefore, Example 2 *is* commensurate in scope with the pending claims that require "at least one interfacial property." Examples 3-5 at pages 22-25 of the present application provide additional illustrations of methods for evaluating whether a physical property or phenomenon of particulate samples is, or is not, an interfacial potential property with respect to them. These examples of the present application illustrate the immense benefits provided by the present invention, and reference is again made to these explanations and showings.

As indicated, claim 1 on appeal recites, *inter alia*, measuring and obtaining at least one interfacial potential property value. As indicated, Mansky does not measure an "interfacial potential property value" as defined in the present application. Mansky simply fails to teach this feature nor does Mansky inherently necessarily have this feature with certainty. The Examiner fails to point to any portion of Mansky that identically teaches this feature, nor can Appellants locate any such teachings in Mansky. Claim 1 also specifies including the interfacial potential property value on a product specification sheet, purchase order, invoice, contract, waiver to a contract, or combinations thereof. Mansky also fails to identically teach this feature. The Examiner fails to point to any portion of Mansky that teaches this feature, nor can Appellants locate any such teachings in Mansky.

In view of the absolute differences that exist between the disclosure of Mansky and the present claims, Mansky fails to identically disclose the features of claim 1 on appeal. In the absence of an identical disclosure, Mansky can not anticipate claim 1, or any of claims 7–12, 14, 16-25 dependent thereon. Independent claim 69, and its dependent claim 70, are not anticipated by Mansky for at least the same reasons as indicated with respect to claim 1 on appeal. Accordingly, Appellants respectfully request reversal of this rejection.

In the Final Office Action, the Examiner does not separately and individually address any of claims 7-12, 14, and 16–25. Mansky fails to anticipate each of these claims for at least the same above-discussed reasons applicable to claim 1. The Examiner also does not cite any portion of Mansky that may describe any of the features of any of claims 7-12, 14, and 16-25, nor can Appellants locate any such teachings in Mansky. Additional patentable differences between these claims and Mansky are discussed below.

Claim 7

Claim 7 further recites the step of further specifying at least one morphological value. Mansky fails to teach this feature. The Examiner fails to point to any portion of Mansky that teaches this feature, nor can Appellants locate any such teachings in Mansky. Further, the Examiner has not pointed to some concrete evidence in the record in support of his general finding that claim 25 is rejected and unpatentable in order to satisfy the substantial evidence test. *In re Zurko*, 258 F.3d 1379, 1385, 59 USPQ2d 1693, 1697 (Fed. Cir. 2001). Accordingly, Appellants respectfully request reversal of this rejection.

Claim 8

Claim 8 further specifies including the morphological value (from claim 7) on a product specification sheet. Mansky fails to teach this feature. The Examiner fails to point to any portion

of Mansky that teaches this feature, nor can Appellants locate any such teachings in Mansky. Accordingly, Appellants respectfully request reversal of this rejection.

Claim 9

Claim 9 further specifies that the morphological value (from claim 8) is selected from surface area, particle size, structure, porosity, or combinations thereof. Mansky fails to teach this feature. The Examiner fails to point to any portion of Mansky that teaches this feature, nor can Appellants locate any such teachings in Mansky. Accordingly, Appellants respectfully request reversal of this rejection.

Claim 10

Claim 10 further comprises the step of further specifying at least one chemical value. Mansky fails to teach this feature. The Examiner fails to point to any portion of Mansky that teaches this feature, nor can Appellants locate any such teachings in Mansky. Accordingly, Appellants respectfully request reversal of this rejection.

Claim 11

Claim 11 further specifies including the chemical value (from claim 10) on a product specification sheet. Mansky fails to teach this feature. The Examiner fails to point to any portion of Mansky that teaches this feature, nor can Appellants locate any such teachings in Mansky. Accordingly, Appellants respectfully request reversal of this rejection.

Claim 12

Claim 12 further specifies that the chemical value (from claim 11) is selected from pH, functional group level, or zeta potential. Mansky fails to teach this feature. The Examiner fails to point to any portion of Mansky that teaches this feature, nor can Appellants locate any such teachings in Mansky. Accordingly, Appellants respectfully request reversal of this rejection.

Claim 14

Claim 14 further specifies that the particulate material in the method of claim 1 is selected to be carbon black. Mansky fails to teach this feature. The Examiner fails to point to any portion of Mansky that teaches this feature, nor can Appellants locate any such teachings in Mansky. Accordingly, Appellants respectfully request reversal of this rejection.

Claim 16

Claim 16 further specifies that the particulate material in the method of claim 1 is selected to be fumed silica. Mansky fails to teach this feature. The Examiner fails to point to any portion of Mansky that teaches this feature, nor can Appellants locate any such teachings in Mansky. Accordingly, Appellants respectfully request reversal of this rejection.

Claim 17

Claim 17 further comprises determining the interfacial potential property value by an absorptometry method. Mansky fails to teach this feature. The Examiner fails to point to any portion of Mansky that teaches this feature, nor can Appellants locate any such teachings in Mansky. Accordingly, Appellants respectfully request reversal of this rejection.

Claim 18

Claim 18 specifies that the absorptometry method of claim 17 uses a liquid other than DBP or paraffin oil. Mansky fails to teach this feature. The Examiner fails to point to any portion of Mansky that teaches this feature, nor can Appellants locate any such teachings in Mansky. Accordingly, Appellants respectfully request reversal of this rejection.

Claim 19

Claim 19 specifies that the absorptometry method of claim 18 uses water, ethylene glycol, or mixtures thereof. Mansky fails to teach this feature. The Examiner fails to point to any

portion of Mansky that teaches this feature, nor can Appellants locate any such teachings in Mansky. As indicated, Examples 2, 3 and 5 (pages 21-25) of the present application illustrate a method using the liquids recited in claim 19 to measure and obtain at least one interfacial potential property value, which can be used in the method recited in claim 1 on appeal. Accordingly, Appellants respectfully request reversal of this rejection.

Claim 20

Claim 20 specifies that the interfacial potential property value is determined by a wicking rate method. Mansky fails to teach this feature. The Examiner fails to point to any portion of Mansky that teaches this feature, nor can Appellants locate any such teachings in Mansky. As indicated, Example 4 (page 23) of the present application illustrates that the determination of a wicking rate as recited in claim 19 to measure and obtain at least one interfacial potential property value, which can be used in the method recited in claim 1 on appeal. Accordingly, Appellants respectfully request reversal of this rejection.

Claim 21

Claim 21 specifies that the interfacial potential property value is determined by a yield point method. Mansky fails to teach this feature. The Examiner fails to point to any portion of Mansky that teaches this feature, nor can Appellants locate any such teachings in Mansky. Accordingly, Appellants respectfully request reversal of this rejection.

Claim 22

Claim 22 specifies that the interfacial potential property value is determined by an interfacial potential vapor adsorption method. Mansky fails to teach this feature. The Examiner fails to point to any portion of Mansky that teaches this feature, nor can Appellants locate any such teachings in Mansky. Accordingly, Appellants respectfully request reversal of this rejection.

Claim 23

Claim 23 specifies that the interfacial potential property value is determined by an inverse gas chromatography method. Mansky fails to teach this feature. The Examiner fails to point to any portion of Mansky that teaches this feature, nor can Appellants locate any such teachings in Mansky. Accordingly, Appellants respectfully request reversal of this rejection.

Claim 24

Claim 24 further specifies that the morphological value in claim 7 is determined by measuring liquid adsorption, measuring vapor adsorption, microscopic analysis, or combinations thereof. Mansky fails to teach this feature. The Examiner fails to point to any portion of Mansky that teaches this feature, nor can Appellants locate any such teachings in Mansky. Accordingly, Appellants respectfully request reversal of this rejection.

Claim 25

Claim 25 further specifies that the morphological value in claim 7 is determined by an adsorption method comprising measuring the adsorption of iodine, nitrogen, CTAB, DBP, or paraffin oil by said particulate material. Mansky fails to teach this feature. The Examiner fails to point to any portion of Mansky that teaches this feature, nor can Appellants locate any such teachings in Mansky. Accordingly, Appellants respectfully request reversal of this rejection.

Claim 69

As indicated, present claim 69 on appeal has similar recitations as claim 1 and further recites the interfacial potential property value is a measurement of at least one physical property of the material that depends on the interaction of the particulate with at least one other material or itself *after the effects of morphology have been removed* in the measuring and obtaining of the

interfacial potential property value for any physical phenomenon that responds to both morphology and interfacial potential.

In the Final Office Action (page 3), the Examiner stated that Mansky teaches in paragraphs [0015]-[0021] identifying the physical properties relating to viscosity, surface tension and interfacial tensions which are "indistinguishable form the instant claims." The Examiner is incorrect. As indicated, Mansky merely relates to measurement of morphological properties, and not an interfacial potential property value as recited in claim 69 and defined in the present application. As indicated, Mansky is properly understood to relate surface tension and interfacial tensions and viscosity measurements therein with fluid samples, and not carbon black, silica or other particulate sample materials. Accordingly, Appellants respectfully request reversal of this rejection.

Claim 70

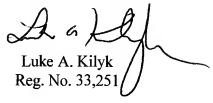
Claim 70 further specifies that the interfacial potential property value in claim 69 is determined by conducting an absorptometry method, a wicking rate method, a yield point method, a interfacial potential vapor adsorption method, or an inverse gas chromatography method. The Examiner fails to point to any portion of Mansky that teaches this feature, nor can Appellants locate any such teachings in Mansky. Accordingly, Appellants respectfully request reversal of this rejection.

Conclusion

For the reasons set forth above, the appellants submit that the claims presently pending in the above-captioned application meet all of the requirements of patentability. It is therefore respectfully requested that the Honorable Board reverse the Examiner and remand this

application for issue.

Respectfully submitted,



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(10) Claims Appendix

1. A method for identifying a product specification for a batch, lot, or shipment of particulate material comprising

providing said particulate material;

measuring and obtaining at least one interfacial potential property value for said batch, lot, or shipment of particulate material, and including the interfacial potential property value on a product specification sheet, purchase order, invoice, contract, waiver to a contract, or combinations thereof for the batch, lot, or shipment of particulate material, wherein said particulate material is carbon black or silica.

7. The method of claim 1, further comprising the step of specifying at least one morphological value to said batch, lot, or shipment of particulate material.

8. The method of claim 7, wherein said specifying comprises including the morphological value on a product specification sheet for the batch, lot, or shipment of particulate material.

9. The method of claim 8, wherein the morphological value is selected from surface area, particle size, structure, porosity, or combinations thereof.

10. The method of claim 1, further comprising the step of specifying at least one chemical value to said batch, lot, or shipment of particulate material.

11. The method of claim 10, wherein said specifying comprises including the chemical value on a product specification sheet for the batch, lot, or shipment of particulate material.

12. The method of claim 11, wherein the chemical value is selected from pH, functional group level, or zeta potential.

14. The method of claim 1, wherein the particulate material is carbon black.

16. The method of claim 1, wherein the particulate material is fumed silica.

17. The method of claim 1, wherein said interfacial potential property value is determined by conducting an absorptometry method that comprises determining volume of a liquid added to said particulate material at maximum torque.

18. The method of claim 17, wherein the absorptometry method uses a liquid other than DBP or paraffin oil.

19. The method of claim 18, wherein the absorptometry method uses water, ethylene glycol, or mixtures thereof.

20. The method of claim 1, wherein the interfacial potential property value is determined by a wicking rate method comprising measuring the rate of wicking of a

liquid up a bed packed with said particulate material.

21. The method of claim 1, wherein the interfacial potential property value is determined by a yield point method comprising measuring degree of flocculation as Bingham yield point.

22. The method of claim 1, wherein the interfacial potential property value is determined by a interfacial potential vapor adsorption method comprising measuring a spreading pressure of a gas on said particulate material.

23. The method of claim 1, wherein the interfacial potential property value is determined by an inverse gas chromatography method comprising measuring retention of time of a gas probe flowing through a bed packed with said particulate material.

24. The method of claim 7, wherein the morphological value is determined by measuring liquid adsorption, measuring vapor adsorption, microscopic analysis, or combinations thereof.

25. The method of claim 7, wherein the morphological value is determined by an adsorption method comprising measuring the adsorption of iodine, nitrogen, CTAB, DBP, or paraffin oil by said particulate material.

69. A method for identifying a product specification for a batch, lot, or shipment of particulate material comprising

providing said particulate material;

measuring and obtaining at least one interfacial potential property value for said batch, lot, or shipment of particulate material, and including the interfacial potential property value on a product specification sheet, purchase order, invoice, contract, waiver to a contract, or combinations thereof for the batch, lot, or shipment of particulate material, wherein said interfacial potential property value of said particulate material is a measurement of at least one physical property that depends on the interaction of said particulate material with at least one other material or with itself, after the effects of morphology have been removed in said measuring and obtaining of said interfacial potential property value for any physical phenomenon that responds to both morphology and interfacial potential, and wherein said particulate material is carbon black or silica.

70. The method of claim 69, wherein said interfacial potential property value is determined by:

conducting an absorptometry method that comprises determining volume of a liquid added to said particulate material at maximum torque; or

a wicking rate method comprising measuring the rate of wicking of a liquid up a bed packed with said particulate material; or

a yield point method comprising measuring degree of flocculation as Bingham yield point; or

a interfacial potential vapor adsorption method comprising measuring a spreading

pressure of a gas on said particulate material; or

an inverse gas chromatography method comprising measuring retention of time of a gas probe flowing through a bed packed with said particulate material.

(11) Evidence Appendix

SELECTED (ANNOTATED) TABLES & FIGURES OF APPLICATION

Example 2

¶[0062]: page 21, lines 22-32.

Table 3

Sample name		Volume @Max Torque		
	% of max DBP	EG	60% EG	Water
Plant A	97	77.1	108.8	17.15
Plant B	98.8	71.95	92.9	132.15
Plant C	97.8	72.8	90	138.35
Plant D	95.8	82.3	115.4	145.8
Plant E	100	73.5	91.9	100.35
↑31	**↑32**	**↑33**	**↑34**	**↑35**

Example 3
¶[0064]: page 22, lines 8-22.

Table 4

Sample name		Volume @Max Torque		
	% of max DBP	EG	60% EG	Water
Plant F	100	115.3	150.5	217.1
Plant G	98.3	114.0	141.5	183.95
Plant H	97.2	111.5	138.9	208.2
Plant I	97.5	114.1	139.6	226.75
↑41	**↑42**	**↑43**	**↑44**	**↑45**

Example 4

¶[0066]: page 23, lines 2-25.

Table 5

↓51

Analytical Properties											
I2 Number	71	85.3	88	86.5	88.6	85.7	85.8	85.8	82.2	85.9	87.9
DBPA	108	106.9	108.2	106.5	108.1	104.9	104.4	105.9	104.5	102.9	107.8
N2SA	61.8	75.6	76	75.7	75.7	73.9		76.1	73.6	74.6	77
STSA	61.4	74.7	71.7	72.2	69.6	69.4		72.8	70.3	70.1	71.3
Tint	89.3	105.5	99.2	98	99.3	104	98.1	94.1	98.3	102.9	94.8
Wicking Rates											
Water	0.0005	0.0011	0.0011	0.0007	0.0009	0.0006	0.0007	0.0006	0.0006	0.0009	0.0010
Formamide	0.0044	0.0062	0.0049	0.0039	0.0063	0.0049	0.0054	0.0029	0.0025	0.0045	0.0050
Ethylene Glycol	0.0023	0.0011	0.0012	0.0008	0.0016	0.0011	0.0016	0.0007	0.0004	0.0012	0.0015
Bromonaphthalene	0.0060	0.0023	0.0031	0.0017	0.0021	0.0017	0.0017	0.0017	0.0011	0.0020	0.0020
Pentane	0.0212	0.0046	0.0077	0.0029	0.0074	0.0091	0.0070	0.0038	0.0028	0.0049	0.0085
Tetrahydrofuran	0.0094	0.0055	0.0125	0.0047	0.0185	0.0065	0.0138	0.0062	0.0032	0.0090	0.0136

↑52

Example 5

¶[0070]: page 24, lines 12-25; ¶[0071]: page 24, line 26 to page 25, line 7.

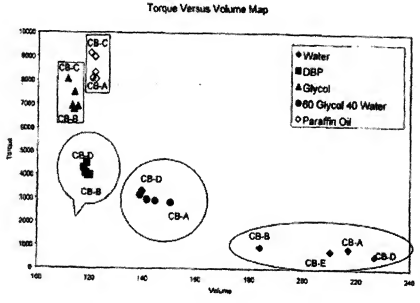

FIG 1

(12) Related Proceeding Appendix

None.